

## Abstract

A portable single lens microscope that provides structure between the eye and the microscope slide, preferably including a single lens having an aperture optimized to attain the best image resolution, preferably including a focus mechanism, preferably including a slide holding and moving mechanism, and preferably including a slide position locking mechanism, or any combination of these structures and mechanisms. Methods are disclosed for determining an optimum aperture size for a single lens microscope (and other uses) including a lens of any type, and methods are disclosed for designing a single lens microscope lens system that provides superior image quality. A single lens microscope according to the present invention can provide substantial and unexpected imaging benefits over previous single lens microscopes and compound microscopes.

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